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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,434	06/30/2003	Paulo Cesar Ribeiro Lima	2764-135	7156

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NIXON & VANDERHYE, PC
1100 N GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201-4714

EXAMINER

BOMAR, THOMAS S

ART UNIT	PAPER NUMBER
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3672

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,434

Applicant(s)

RIBEIRO LIMA ET AL

Examiner

Shane Bomar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/7/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Brazil on 12/28/2001. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

Drawings

2. Figure 5 should be designated by a legend such as --Prior Art-- (not "State of the Art") because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: on page 13, the recitation of "the initial well directional well" in lines 16-17 should most likely be -- the initial well is a directional well--; also on page 13, the recitation of "the initial well a" should most likely be --the initial well is a--. Appropriate correction is required.

Claim Objections

4. The claims are objected to because they include reference characters which are not enclosed within parentheses (see line 6 of claim 1).

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

5. Claims 10 and 27 are objected to because of the following informalities: in claim 10, it is unclear what well (i.e., the first well or the multilateral well) is being referred to in line 1 of the claim; claim 27 is said to depend from itself, which is improper and the claim will therefore be examined as if it depends from claim 23. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 23, 25, 27, 29-31, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by PCT WO 98/50679 to Hassan et al.

Regarding claim 23, Hassan et al disclose an arrangement of long-distance wells for the production and transport of fluids, and exploitation of mineral layers present in a geological

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formation, comprising an initial drilled well 1 and at least one other multilateral well 4, forming a network of underground channels from which the flow of fluids inherently takes place in the direction from the wells of greater pressure to the well of lesser pressure (see Figs. 1-5).

Regarding claim 25, long distances are obtained by one or more wells in series, which are also connected hydraulically to the initial well 1, said initial well being the only one connected to the production unit 12, while the other wells have their heads closed off by wellheads 11 (see Figs. 4-5 and page 15, line 25 through page 16, line 2).

Regarding claim 27, as best understood to depend from claim 23, the arrangement allows for the drainage of the multilateral wells of medium length, each provided with three drilling sections (i.e., a vertical section, an angled section 5, and a horizontal section 6), two of these drilling sections being of oblique orientation in relation to the other drilling sections as far as a production unit, by the hydraulic connection of multiple drilling sections of the initial well 1 with the drilling sections of the multilateral wells in such a way as to conduct the fluids drained from the reservoir as far as a production unit on the surface (see Fig. 5).

Regarding claim 29, the arrangement forms a drainage network for the flow of the fluids produced from the formation (see Fig. 5 and page 19, lines 8-11).

Regarding claims 30 and 31, the drainage network is formed by an arrangement of multilateral wells drilled in series or in parallel and in an arrangement such as will allow for the optimization of the drainage of the whole fluids production area of the mineral layer, the inherent difference between the pressures of the various different wells determining that the flow of the fluids will be in the direction from the wells of greater pressure to the first well of lesser pressure

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(see page 14, lines 16-26 and page 15, lines 4-33 of reference A), which will become the production well for the layer, the other wells having their heads closed off by the wellhead 11.

Regarding claim 34, the long-distance wells do away with the need for fracturing the reservoir in order to obtain the fluids produced. Fracturing is only performed if there is difficulty in obtaining communication between the initial wellbore and the conduit well; otherwise fracturing is not necessary (see page 15, lines 4-16).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2, 4-7, 9-12, 14, and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT WO 98/50679 (reference A) to Hassan et al in view of US patent 5,520,247 (reference B) to Gmelig Meyling et al.

Regarding claim 1, reference A teaches a method for the construction of an arrangement of long-distance wells for the production, transport, and exploitation of mineral layers present in a reservoir of a geological formation, said method comprising: drilling a first well 1 of medium distance; then drilling at least one multilateral well 4, formed of two separated drilling sections 6, each of medium length, said multilateral well connected hydraulically to the medium-distance well by means of drilling sections 6 and 6a, so as to form a long-distance well by the hydraulic connection of the end of one of said drilling sections of the multilateral well to the end of a

drilling section of the medium-distance well, so obtaining a long-distance well which allows for the drainage of the reservoir (see Fig. 5; page 18, lines 10-20; page 19, lines 8-11). It is not explicitly taught that the reservoir is drained in deep water and extremely deep water to a platform in shallower water.

Reference B teaches a method for the production, transport, and exploitation of mineral layers similar to that of reference A, wherein a first well 31 is hydraulically connected to a lateral well 35 (see Fig. 2). It is further taught that the reservoir is drained in deep water and extremely deep water to a platform in shallower water (see Fig. 2). It would have been obvious to one of ordinary skill in the art, having the teachings of reference A and reference B before him at the time the invention was made, to modify the method taught by reference A to include the subsea environment of reference B, in order to obtain a method for production wherein no permanent offshore production facilities are required (see col. 3, lines 18-27 of reference B). One would have been motivated to make such a combination because reference A teaches that it is notoriously known in the art that target reservoirs vary in location, depth, nature, etc., so the method would be applicable to any reservoir that can be produced with one main production wellbore and any combination of multiple conduit wells that, as a network, allow a larger portion of the reservoir to be accessed.

Regarding claim 2, the combination applied to claim 1 above teaches that the wells are inherently drilled on the basis of indication from geological studies (see page 13, lines 8-16 of reference A).

Regarding claims 4 and 5, the combination applied to claim 1 above teaches that the mineral layer comprises fluids in the gaseous, liquid, or solid state, in isolation or in a mixture of

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any proportion, and the fluids produced comprise petroleum and gas (see page 13, lines 2-7 of reference A).

Regarding claim 6, the combination applied to claim 1 above teaches that the operations of completion and casing are dispensed with for the multilateral wells (see page 15, lines 28-33 of reference A).

Regarding claims 7 and 9, the combination applied to claim 1 above teaches that the initial well contains a vertical well section and a directional section (see Fig. 4 of reference A), or the initial well can be just a vertical well (see Fig. 2 of reference B).

Regarding claim 10, as best understood, the combination applied to claim 1 above teaches that the initial well is connected to a production unit platform by means of a rigid production pipe located inside a riser or flexible line of short length, the well being the production well (see page 13, lines 17-26 of reference A or Fig. 2 of reference B).

Regarding claim 11, the combination applied to claim 1 above teaches that the final distance obtained is the result of the sum of the distances of the two drilling sections of the multilateral well and the drilling section of the medium-distance well, corresponding to a total distance of approximately three times the distance of each drilling section of medium distance (see Fig. 5).

Regarding claim 12, the combination applied to claim 1 above teaches that the distance of said medium-distance well is increased by more than three times by the drilling of one or more wells in a series which are each connected hydraulically to the medium-distance well, in such a way as to increase the total distance, only the medium-distance well being connected to a production unit, while the other wells have their heads closed off (see Fig. 5 and page 16, lines 1-

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2 of reference A wherein the other wells heads are closed off by wellheads; see Fig. 2 and col. 4, lines 54-56 of reference B wherein the well is closed off by cement).

Regarding claim 14, the combination applied to claim 1 above teaches that there are drilled a plurality of multilateral wells of medium length, at least one of which is provided with a first vertical drilling section and two more drilling sections of oblique orientation, the hydraulic connection of the multiple drilling sections of said first well to the drilling sections of the multilateral wells being carried out in such a way as to conduct the fluids drained from the reservoir as far as a production unit on the surface (see Fig. 5 and associated description in reference A).

Regarding claim 16, the combination applied to claim 1 above teaches that for the transport of the fluids produced, two wells of medium length hydraulically connect two operational units 11 and 12 in the manner of a conventional pipe for the transport of liquids and/or gases (see Fig. 2 and page 16, lines 13-16 of reference A).

Regarding claim 17, the combination applied to claim 16 above teaches that for the transport of the fluids produced, the underground reservoir is initially penetrated by the first well, then penetrated by the multilateral well, the end of the drilling section of said first well is connected to the end of the drilling section of said multilateral well, thereby forming one long-distance well, the end of the drilling section of the multilateral well is hydraulically connected to the end of the drilling section of said first well and to the production unit (see Figs. 1-5 and page 18, line 10 through page 19, line 11 of reference A).

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Regarding claim 18, the combination applied to claim 1 above teaches that the fluids produced from the production layers are recovered with the aid of a drainage network (see page 19, lines 3-11 of reference A).

Regarding claims 19-21, the combination applied to claim 18 above teaches that the drainage network is formed by an arrangement of multilateral wells drilled in series or in parallel and in an arrangement such as will allow for the optimization of the drainage of the whole fluids production area of the mineral layer, the inherent difference between the pressures of the various different wells determining that the flow of the fluids will be in the direction from the wells of greater pressure to the first well of lesser pressure (see page 14, lines 16-26 and page 15, lines 4-33 of reference A), which will become the production well for the layer, the other wells having their heads closed off by either the wellhead of reference A or the cement of reference B.

Regarding claim 22, the combination applied to claim 21 above teaches that the arrangement of wells of the drainage network comprises vertical, directional, and multilateral wells (see Figs. 1-5 of reference A).

10. Claims 3, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over reference A in view of reference B as applied to claim 1 above, and further in view of US patent 5,217,076 to Masek.

The combination applied to claim 1 teaches the method for the construction of an arrangement of long-distance wells for the production, transport, and exploitation of mineral layers, consisting of a main well and at least one multilateral well of medium distance that has two drilling sections 5 and 6. It is not expressly taught that the two drilling sections of the multilateral well run in opposite directions.

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Masek teaches a method for the construction of an arrangement of long-distance wells for the production, transport, and exploitation of mineral layers similar to that of the combination (see Figs. 1 and 2, and claim 1). It is further taught that drilling sections of a multilateral well can run in opposite directions (see Fig. 2, wherein drilling sections 5 run in opposite directions). It would have been obvious to one of ordinary skill in the art, having the teachings of the combination and Masek before him at the time the invention was made, to modify the method of drilling the multilateral wells taught by the combination to include the drilling sections that run in opposite directions of Masek, in order to obtain more drainage area underground with less well sites. One would have been motivated to make such a combination because Masek has shown it to be notoriously known in the art to run drilling sections of a multilateral in opposite directions, and because the method of the combination would benefit by having less drilling sites 4 (see Fig. 5 of reference A) and still cover the same drainage area.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over reference A in view of reference B as applied to claim 1 above, and further in view of US patent 6,425,448 to Zupanik et al.

The combination applied to claim 1 teaches the method for the construction of an arrangement of long-distance wells for the production, transport, and exploitation of mineral layers, consisting of an initial well. It is not expressly taught that the initial well is multidirectional.

Zupanik et al teach a method for the construction of an arrangement of long-distance wells for the production, transport, and exploitation of mineral layers, consisting of an initial

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well 210 similar to that of the combination (see Figs. 9A-9B). It is further taught that the initial well is multidirectional (see Fig. 9B and col. 13, line 53 through col. 14, line 16).

12. Claims 24, 26, 28, 32, 33, 38, 39, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hassan et al in view of Masek.

Hassan et al teach the arrangement of long-distance wells for the production and transport of fluids, and exploitation of mineral layers present in a geological formation of claim 23 and the method for the construction of a network of pipes for the transport of fluids produced from mineral layers of claim 35. It is not expressly taught that the two drilling sections of the multilateral well run in opposite directions, or that the arrangement of wells are drilled with the wells intersecting one another.

Masek teaches an arrangement of long-distance wells for the production and transport of fluids, and exploitation of mineral layers present in a geological formation and a method for the construction of a network of pipes for the transport of fluids produced from mineral layers similar to that of Hassan et al (see Figs. 1 and 2, and claim 1). It is further taught that drilling sections of a multilateral well can run in opposite directions, that the arrangement comprises vertical, directional, and multilateral wells, and that the arrangement of wells are drilled with the wells intersecting one another (see Fig. 2, wherein drilling sections 5 run in opposite directions and intersect main well 4). It would have been obvious to one of ordinary skill in the art, having the teachings of Hassan et al and Masek before him at the time the invention was made, to modify the method of drilling the multilateral wells taught by Hassan et al to include the drilling sections that run in opposite directions and intersect of Masek, in order to obtain more drainage area underground with less well sites. One would have been motivated to make such a

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combination because Masek has shown it to be notoriously known in the art to run drilling sections of a multilateral in opposite directions, and because the method of Hassan et al would benefit by having less drilling sites 4 (see Fig. 5 of Hassan et al) and still cover the same drainage area.

13. Claims 35-37 and 40-42 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hassan et al.

Regarding claims 35 and 40, Hassan et al disclose a method for the construction of a network of pipes for the transport of fluids produced from mineral layers present in an underground reservoir said method comprising: drilling one single pipe 5 into the underground reservoir 10 (see Fig. 2); using two wells of medium distance which are hydraulically connected, said wells being connected to two operational units 11 and 12 in the manner of a conventional pipe for the transport of liquids and/or gases, wherein unit 12 is used to produce the fluids obtained and wherein unit 11 could be used for production or to inject fluids into the formation if necessary (see Figs. 2 and 5; page 16, lines 13-21). While it is not explicitly taught that the network of pipes is used for storage, it would have been, at the time the invention was made, obvious to one of ordinary skill in the art that the network could be used for storing fluids from the underground reservoir. The storage capability of the network is obvious because anytime that production has to be halted, as is notoriously known in the art to occur on occasion, the fluids would remain stored in whatever part of the pipe network the fluids happened to be located in when production halted.

Regarding claims 36, 37, 41, and 42, storage is carried out in a network of pipes constructed in accordance with an arrangement of multilateral wells drilled in series or in

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parallel, said network being connected hydraulically by means of at least two wells of medium distance to at least two operational units, the other wells having their heads closed off by the wellhead 11 (see Figs. 2 and 5).

Conclusion

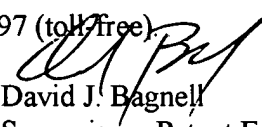
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wolcott, Willman, Guinn, Leaute, Matthews, Donovan et al, Johnson, Yu et al, Graham et al, and Longbottom et al teach various other drainage and drilling patterns of interest.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 703-305-4849. The examiner can normally be reached on Monday - Thursday from 7:00am to 4:30pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 703-308-2151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

tsb
December 7, 2004


David J. Bagnell
Supervisory Patent Examiner
Art Unit 3672